west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

October 31, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-4902345, issued to EQT PRODUCTION COMPANY, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.

James Martin
Chief

Operator's Well No: 513436
Farm Name: NEELY, SHIRLEY J.
API Well Number: 47-4902345
Permit Type: Horizontal 6A Well
Date Issued: 10/31/2014

API Number: 49-02345

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.

2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.

3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.

4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.

5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations,* 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.

6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.

7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.

8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

WW - 6B
(9/13)

4704902345

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: EQT Production Company | | 049 | 5 | 380
Operator ID | County | District | Quadrangle

2) Operator's Well Number: 513436 Well Pad Name: GRT26

3) Farm Name/Surface Owner : Neely Public Road Access: CO Rt 17/1

4) Elevation, current ground: 1141' Elevation, proposed post-construction: 1141'

5) Well Type: (a) Gas • Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow • Deep _____

Horizontal •

6) Existing Pad? Yes or No: Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Target formation is Marcellus at a depth of 7637' with the anticipated thickness to be 103 feet and anticipated target pressure of 4599 PSI

8) Proposed Total Vertical Depth: 7,637

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 11,779

11) Proposed Horizontal Leg Length 2,660

12) Approximate Fresh Water Strata Depths: 447

13) Method to Determine Fresh Water Depth: By offset wells

14) Approximate Saltwater Depths: 1439, 2762

15) Approximate Coal Seam Depths: 109, 348, 452, 486, 793

16) Approximate Depth to Possible Void (coal mine, karst, other): ~486-494' ✓

17) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

WR46
10-27-14

WW - 6B
(3/13)

4704902345

CASING AND TUBING PROGRAM

18)

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: for Drilling	INTERVALS: Left in Well	CEMENT: Fill- up (Cu.Ft.)
Conductor	20	New	MC-50	81	40	40	38 C.T.S.
Fresh Water	13 3/8	New	MC-50	54	850/650	850/650*	743 C.T.S.
Coal	-	-	-	-	-	-	-
Intermediate	9 5/8	New	MC-50	40	3,054	3,054	1,198 C.T.S.
Production	5 1/2	New	P-110	20	11,779	11,779	See Note 1
Tubing	2 3/8		J-55	4.6	-	-	May not be run, if run will be set 100' less than TD
Liners							

WRH 10-27-14

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	24	0.375	-	Construction	1.18
Fresh Water	13 3/8	17 1/2	0.38	2,480	See Note 2	1.21
Coal	-	-	-	-	-	-
Intermediate	9 5/8	12 3/8	0.395	3,590	See Note 2	1.21
Production	5 1/2	8 1/2	0.361	12,640	-	1.27/1.86
Tubing						
Liners						

Packers

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.
Note 2: Reference Variance 2014-17.
* see attached casing letter

49-02345

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and complete a new horizontal well in the marcellus formation. The vertical drill to go down to an approximate depth of 5310'. Then kick off the horizontal leg into the Marcellus using a slick water frac.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated treating pressures are expected to average approximately 8500 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): no additional

22) Area to be disturbed for well pad only, less access road (acres): no additional

23) Describe centralizer placement for each casing string.

- Surface: Bow spring centralizers – One at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One cent at the shoe and one spaced every 500'.
- Production: One spaced every 1000' from KOP to Int csg shoe

24) Describe all cement additives associated with each cement type. **Surface (Type 1 Cement):** 0-3% Calcium Chloride ✓ Used to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of the cement slurry to a thief zone. **Intermediate (Type 1 Cement):** 0-3% Calcium Chloride. Salt is used in shallow, low temperature formations to speed the setting of cement slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss of whole drilling fluid or cement slurry (not filtrate) to a thief zone.

Production:

Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening time. 0.3% CFR (dispersant). Makes cement easier to mix.

Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening time. 0.2-0.3% CFR (dispersant). This is to make the cement easier to mix. 60 % Calcuim Carbonate. Acid solubility. 0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation.

25) Proposed borehole conditioning procedures. **Surface:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. To ensure that there is no fill, short trip two stands with no circulation. If there is fill, bring compressors back on and circulate hole clean. A constant rate of higher than expected cuttings volume likely indicates washouts that will not clean up. **Intermediate:** Circulate hole clean (Approximately 30-45 minutes) rotating & reciprocating one full joint until cuttings diminish at surface. When cuttings returning to surface diminish, continue to circulate an additional 5 minutes. If foam drilling, to enhance hole cleaning use a soap sweep or increase injection rate & foam concentration. **Production:** Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge holes bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

49-02345

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Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
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March 18, 2014

Nabors Completion & Production Services Company
1380 Route 286 Hwy E #121
Indiana PA 15701

Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

- Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

Sincerely,

James Peterson

James Peterson
Environmental Resources Specialist / Permitting

Promoting a healthy environment.

49-02345

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BEFORE THE OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE OF WEST VIRGINIA

IN THE MATTER OF A VARIANCE FROM REGULATION 35 CSR § 4-11.4/11.5/14.1 AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE THE OPERATIONAL REGULATIONS OF CEMENTING OIL AND GAS WELLS	))))))	**ORDER NO. 2014 - 17**

REPORT OF THE OFFICE

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

FINDINGS OF FACT

1.) Nabors Completion & Production Services Co. proposes the following cement blend:

- 2% Calcium Chloride (Accelerator)
- 0.25 % Super Flake (Lost Circulation)
- 94% Type "1" Cement
- 5.20 % Water

2.) Laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

49-02345

CONCLUSIONS OF LAW

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

ORDER

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection casing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

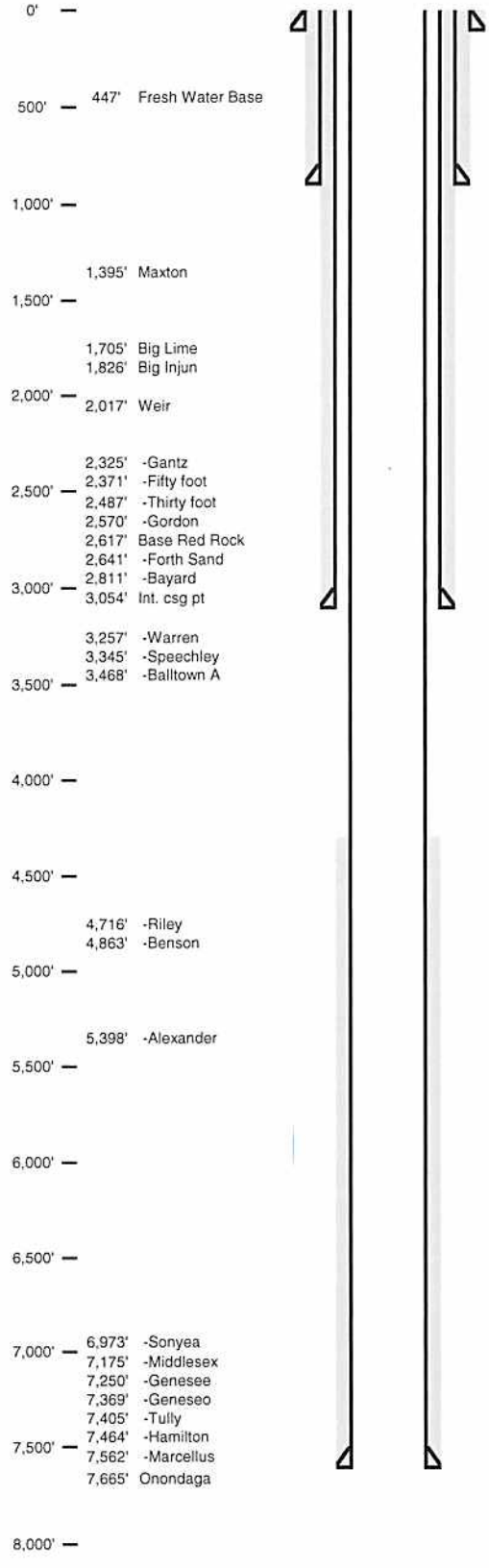
OFFICE OF OIL AND GAS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OF THE STATE OF WEST VIRGINIA

James Martin, Chief
Office of Oil and Gas

49-02345

Well Schematic
EQT Production

Well Name	513436(GRT26H3)
County	Marion
State	West Virgina
Elevation KB:	1154
Target	Marcellus
Prospect	
Azimuth	160.97
Vertical Section	3429



Hole Size 24" - 20" Conductor at 40'
Bit Size 17.5"

TOC @ Surface
13 3/8", MC-50, 54.5# @ 850' ft MD
Bit Size 12.375"

TOC @ Surface
9 5/8", MC-50, 40# @ 3,054' ft MD
Bit Size 8.5"

KOP = 5,331' ft MD
10 Deg DLS

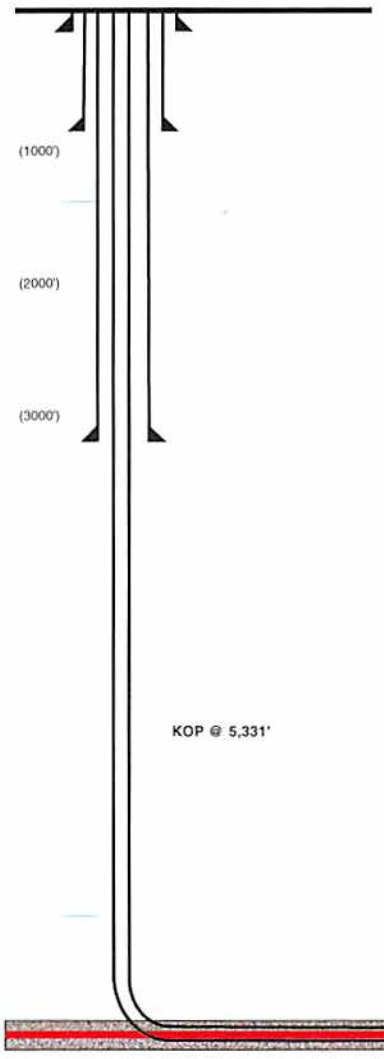
Land @ 8,619' ft MD
7,637' ft TVD

5 1/2", P-110, 20# 11,279' ft MD
7,637' ft TVD

49-02345

Well 513436(GRT26H3)
EQT Production
Grant Town
Marion West Virgina

Azimuth 165.97
Vertical Section 3429



TVD Depth (feet)	Formation Tops (TVD)			
0'				
250'				
500'	Base Fresh Water	447		
750'				
1,000'				
1,250'				
1,500'	Maxton	1395	-	1468
1,750'	Big Lime	1705	-	1826
	Big Injun	1826	-	1937
2,000'	Weir	2017	-	2038
	-Gantz	2325	-	2344
2,250'	-Fifty foot	2371	-	2433
	-Thirty foot	2487	-	2525
2,500'	-Gordon	2570	-	2581
	Base Red Rock	2617		
2,750'	-Forth Sand	2641	-	2715
	-Bayard	2911	-	2974
3,000'	Int. sag pt	3054		
3,250'	-Warren	3257	-	3288
	-Speechley	3345	-	3431
3,500'	-Balltown A	3468	-	4716
3,750'				
4,000'				
4,250'				
4,500'				
4,750'	-Riley	4716	-	4743
	-Benson	4863	-	4936
5,000'				
5,250'				
5,500'	-Alexander	5396	-	5416
5,750'				
6,000'				
6,250'				
6,500'				
6,750'	-Sonyea	6973	-	7175
	-Middlesex	7175	-	7250
7,000'	-Genesee	7250	-	7369
	-Geneseo	7369	-	7405
7,250'	-Tully	7405	-	7464
	-Hamilton	7464	-	7562
7,500'	Marcellus top	7562		
	Target inside Marcellus	**7637**		
7,750'	Marcellus Bottom	7665		

Hole Size (inches)	Casing Type	Size (inches)	Wt (ppf)/Grade
24	Conductor	20	
17 1/2	Surface	13 3/8	54#/MC-50
12 3/8	Intermediate	9 5/8	40#/MC-50
8 1/2	Production Casing	5 1/2	20#/P-110

Proposed Well Work:
Drill and complete a new horizontal well in the Marcellus formation.
The vertical drill to go down to an approximate depth of 5331'.
Then kick of the horizontal leg into the Marcellus using a slick water frac.

Land curve @ 7,637' ft TVD
8,619' ft MD

Est. TD @ 7,637' ft TVD
11,279' ft MD

2,660' ft Lateral

WW-9
(5/13)

Page _____ of 49-02345

API No. 47 - 049 - 02345
Operator's Well No. 513436

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

Fluids/Cuttings Disposal & Reclamation Plan

Operator Name EQT Production Co. OP Code _____

Watershed (HUC10) Rush Run Quadrangle Grant Town

Elevation 1141' County Marion District Paw Paw

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes x No ___

Will a pit be used ? Yes: X No: _____

If so please describe anticipated pit waste: Flowback waste & residual solids

Will a synthetic liner be used in the pit? Yes X No _____ If so, what ml.? 60

Proposed Disposal Method For Treated Pit Wastes:

_____ Land Application
• Underground Injection (UIC Permit Number 0014, 8462, 4037)
• Reuse (at API Number various)
• Off Site Disposal (Supply form WW-9 for disposal location)
_____ Other (Explain _____)

Will closed loop system be used ? Yes, The closed loop system will remove drill cuttings from the drilling fluid. The drill cuttings are then prepared for transportation to an off-site disposal facility.

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air is used to drill the top-hole sections of the wellbore, Surface, Intermediate, and Pilot hole sections, water based mud is used to drill the curve and lateral.

If oil based, what type? Synthetic, petroleum, etc _____

Additives to be used in drilling medium? MILBAR, Viscosifer, Alkalinity Control, Lime, Chloride Salts,Rate Filtration Control, Deflocculant, Lubricant, Detergent, Defoaming, Walnut Shell, X-Cide, SOLTEX Terra. Of the listed chemicals the following are generally used when drilling on air: lubricant, detergent, defoaming. Water based fluids use the following chemicals: MILBAR, viscosifer, alkalinity control, lime, chloride salts, rate filtration control, deflocculant, lubricant, detergent, defoaming, walnut shell, x-cide, SOLTEX terra

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Landfill

- If left in pit and plan to solidify what medium will be used? (Cement, Line, sawdust) n/a
- Landfill or offsite name/permit number? See Attached List

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Received
Office of Oil & G
OCT 31 2014

Company Official Signature _____
Company Official (Typed Name) Victoria J. Roark
Company Official Title Permitting Supervisor

Subscribed and sworn before me this 30 day of Oct., 20 14

_____ Notary Public

My commission expires 10-24-22

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Pamela Sykes
EQT Production
PO Box 280
Bridgeport, WV 26330
My Commission Expires Aug. 24, 2022

49-02345

EQT Production Water plan
Offsite disposals for Marcellus wells

CWS TRUCKING INC.
P.O. Box 391
Williamstown, WV 26187
740-516-3586
Noble County/Noble Township
Permit # 3390

LAD LIQUID ASSETS DISPOSAL INC.
226 Rankin Road
Washington, PA 15301
724-350-2760
724-222-6080
724-229-7034 fax
Ohio County/Wheeling
Permit # USEPA WV 0014

TRI COUNTY WASTE WATER MANAGEMENT, INC.
1487 Toms Run Road
Holbrook, PA 15341
724-627-7178 Plant
724-499-5647 Office
Greene County/Waynesburg
Permit # TC-1009

Waste Management - Meadowfill Landfill
Rt. 2, Box 68 Dawson Drive
Bridgeport, WV 26330
304-326-6027
Permit #SWF-1032-98
Approval #100785WV

Waste Management - Northwestern Landfill
512 E. Dry Road
Parkersburg, WV 26104
304-428-0602
Permit #SWF-1025 WV-0109400
Approval #100833WV

BROAD STREET ENERGY LLC
37 West Broad Street
Suite 1100
Columbus, Ohio 43215
740-516-5381
Washington County/Belpre Twp.
Permit # 8462

TRIAD ENERGY
P.O. Box 430
Reno, OH 45773
740-516-6021 Well
740-374-2940 Reno Office Jennifer
Nobel County/Jackson Township
Permit # 4037

KING EXCAVATING CO.
Advanced Waste Services
101 River Park Drive
New Castle, Pa. 16101
Facility Permit# PAR000029132

49-02345

WW-9

Operator's Well No. 513436

Proposed Revegetation Treatment: Acres Disturbed no additional Prevegetation pH

Lime 3 Tons/acre or to correct to pH 6.5

Fertilize type

Fertilizer Amount 1/3 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
KY-31	40	Orchard Grass	15
Alsike Clover	5	Alsike Clover	5
Annual Rye	15		

Attach:
Drawing(s) of road, location,pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: William W Underwood

Comments:

Title: Environmental Inspector Date: 7-29-14

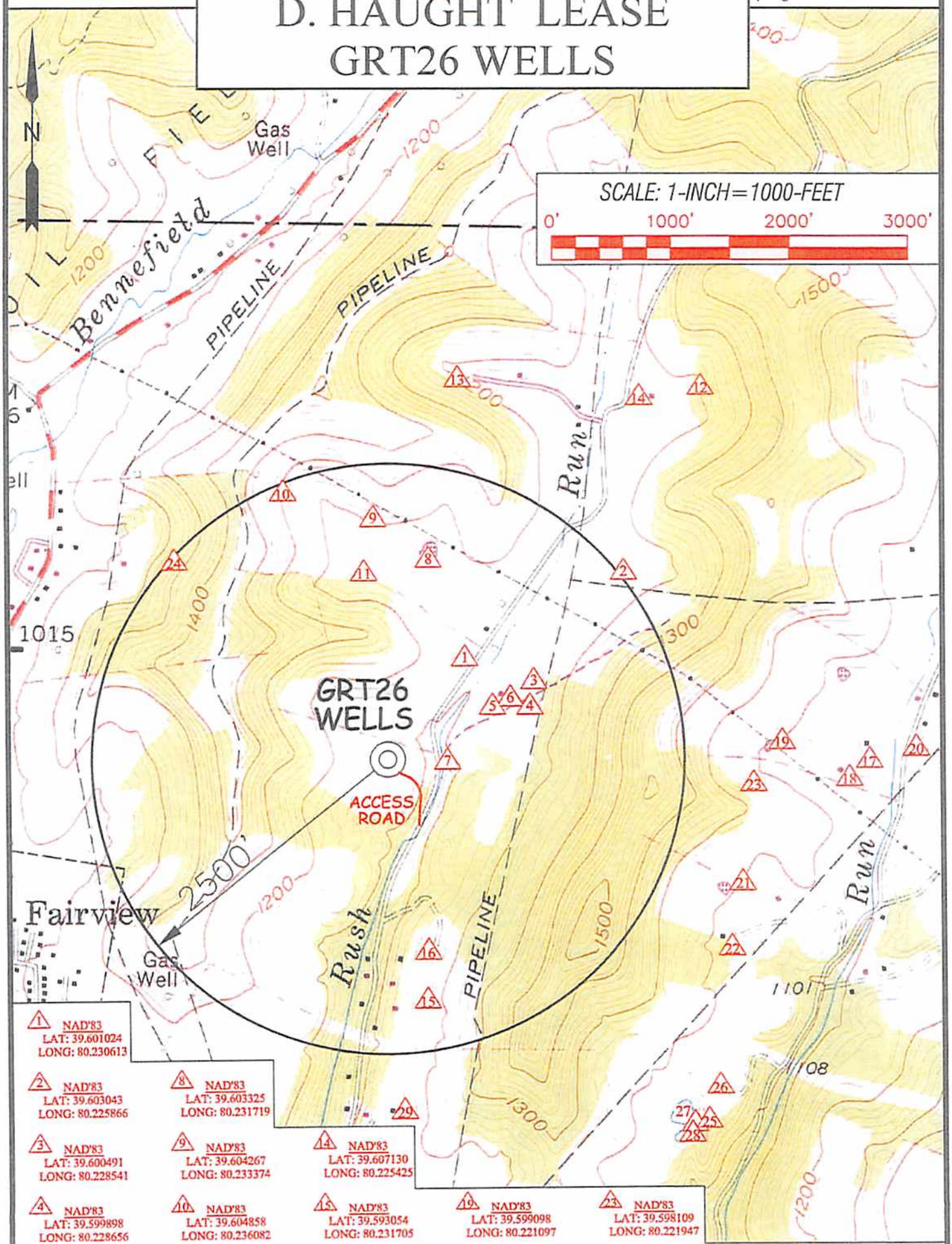
Field Reviewed? (✓) Yes ( ) No

49-02345

WATER SAMPLES

D. HAUGHT LEASE
GRT26 WELLS

page of



1 NAD'83 LAT: 39.601024 LONG: 80.230613	8 NAD'83 LAT: 39.603325 LONG: 80.231719	14 NAD'83 LAT: 39.607130 LONG: 80.225425
2 NAD'83 LAT: 39.603043 LONG: 80.225866	9 NAD'83 LAT: 39.604267 LONG: 80.233374	15 NAD'83 LAT: 39.593054 LONG: 80.231705
3 NAD'83 LAT: 39.600491 LONG: 80.228541	10 NAD'83 LAT: 39.604858 LONG: 80.236082	16 NAD'83 LAT: 39.594192 LONG: 80.231684
4 NAD'83 LAT: 39.599898 LONG: 80.228656	11 NAD'83 LAT: 39.603012 LONG: 80.233647	17 NAD'83 LAT: 39.598669 LONG: 80.218472
5 NAD'83 LAT: 39.599898 LONG: 80.229777	12 NAD'83 LAT: 39.607375 LONG: 80.223586	18 NAD'83 LAT: 39.598246 LONG: 80.219072
6 NAD'83 LAT: 39.600090 LONG: 80.229246	13 NAD'83 LAT: 39.6075427 LONG: 80.230861	
7 NAD'83 LAT: 39.598626 LONG: 80.2311201		

19 NAD'83 LAT: 39.599098 LONG: 80.221097	23 NAD'83 LAT: 39.598109 LONG: 80.221947	
20 NAD'83 LAT: 39.598960 LONG: 80.217073	24 NAD'83 LAT: 39.603269 LONG: 80.239347	27 NAD'83 LAT: 39.590178 LONG: 80.223698
21 NAD'83 LAT: 39.595797 LONG: 80.222268	25 NAD'83 LAT: 39.590257 LONG: 80.223263	28 NAD'83 LAT: 39.589936 LONG: 80.223771
22 NAD'83 LAT: 39.594292 LONG: 80.222588	26 NAD'83 LAT: 39.591056 LONG: 80.222930	29 NAD'83 LAT: 39.590469 LONG: 80.232399

RECEIVED
Office of Oil & Gas
JUL 23 2014
WV Department of
Environmental Protection

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.

DRAWN BY	FILE NO.	DATE	CADD FILE:
K.D.W.	7248	07/10/14	7248WSGRT26.dwg

TOPO SECTION OF:
GRANT TOWN, WV 7.5' QUAD

DISTRICT	COUNTY	TAX MAP–PARCEL NO.
PAW PAW	MARION	09–16

OPERATOR:
EQT PRODUCTION COMPANY
115 PROFESIONAL PLACE
P.O. BOX 280
BRIDGEPORT, WV 26330

FORM WW-6

7,002'

LATITUDE 39°37'30"

LONGITUDE 80°12'30"

6,199'

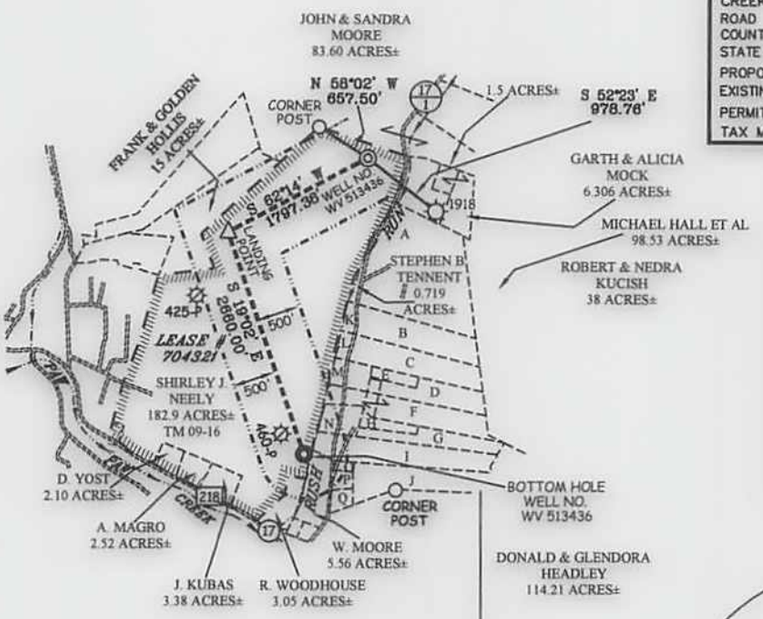
NORTH

NOTES ON SURVEY

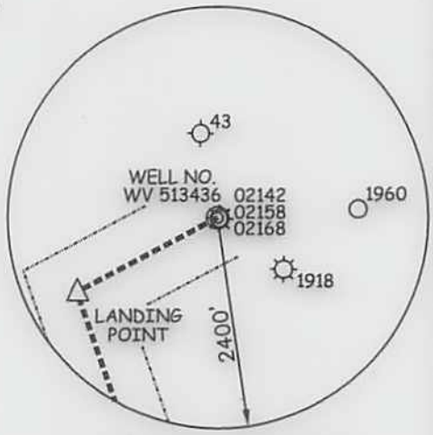
1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.

LEGEND

LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
STATE ROUTE	
PROPOSED WELL	⊕
EXISTING WELL	⊙
PERMITTED WELL	○
TAX MAP–PARCEL	00–00



A - D. TENNANT ET AL	33.99 ACRES±
B - E. TENNANT	10.98 ACRES±
C - H. LAYMAN	9.35 ACRES±
D - C. TENNANT ET AL	8.61 ACRES±
E - C. TENNANT	1.57 ACRES±
F - C. TENNANT ET AL	9.46 ACRES±
G - W. ICE	5.65 ACRES±
H - H. HAUGHT	1.90 ACRES±
I - A. HENDERSON ET AL	11.70 ACRES±
J - D. HEADLEY ET AL	9.86 ACRES±
K - S. TENANT	1.2 ACRES±
L - R. EDDY	1.71 ACRES±
M - F. MARKLEY	2.29 ACRES±
N - R. HUNTER	3.35 ACRES±
O - D. WOOD ET AL	0.608 ACRES±
P - D. ROWAN	1 ACRE±
Q - P. MARKLEY	1.32 ACRES±

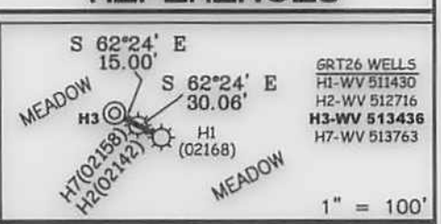


EQT PRODUCTION COMPANY
D. HAUGHT LEASE
190.5 ACRES±
WELL NO. WV 513436

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 400,932.2	E. 1,793,400.3
NAD'27 GEO.	LAT-(N) 39.598477	LONG-(W) 80.233183
NAD'83 UTM (M)	N. 4,383,483.7	E. 565,854.4
	LANDING POINT	
NAD'27 S.P.C.(FT)	N. 400,095.1	E. 1,791,809.8
NAD'27 GEO.	LAT-(N) 39.596143	LONG-(W) 80.238803
NAD'83 UTM (M)	N. 4,383,220.6	E. 565,374.2
	BOTTOM HOLE	
NAD'27 S.P.C.(FT)	N. 397,580.5	E. 1,792,677.2
NAD'27 GEO.	LAT-(N) 39.589259	LONG-(W) 80.235652
NAD'83 UTM (M)	N. 4,382,458.9	E. 565,651.2

REFERENCES



Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING INC
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-5634 WWW.SLSSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 849 C. Victor Moyers

C. VICTOR MOYERS LICENSED No. 849 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE APRIL 29 , 20 13

REVISED AUGUST 06 , 20 14

OPERATORS WELL NO. WV 513436

API WELL NO. 47 — 049 — 02345 NGA
STATE — COUNTY — PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200

FILE NO. 7248P513436R4

SCALE 1" = 2,000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :

ELEVATION 1,141' WATERSHED RUSH RUN

DISTRICT PAW PAW COUNTY MARION QUADRANGLE GRANT TOWN 7.5'

SURFACE OWNER SHIRLEY J. NEELY ACREAGE 182.9±

ROYALTY OWNER JUDITH YOST ROBINSON, ET AL ACREAGE 190.5±

PROPOSED WORK : LEASE NO. 704321

DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___

PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 7561'

COUNTY NAME

PERMIT

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

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